

THE CAROLINA CHEMIST

Published three times a year by the Journal Club of the Department of
Chemistry of the University of North Carolina, Chapel Hill, N. C.

Vol. 2

APRIL, 1916

No. 2

C. B. HOKE, Editor-in-Chief

C. B. CARTER and V. A. COULTER, Associate Editors

L. C. HALL, Business Manager

FACULTY AND CLASS REPRESENTATIVES

DR. J. M. BELL, Faculty

HAL INGRAM, Junior

O. A. PICKETT, Senior

I. V. GILES, Sophomore

THE ALUMNI AND THE CHEMIST

Quite a few alumni have expressed their delight with the Chemist. Several have said "It fills a long-felt want" and "It is a fine thing; keep it up." Such expressions stimulate the fellows in the laboratory to their best efforts in giving you the Chemist. As best we can, we hope to continue keeping you in touch with the Department and with one another. But this is only a part of "The Spirit of the Department."

Do you not still feel the influence of this spirit? You do; and we fellows in the laboratory want you to show it. Help us make the Chemist a better publication. You can by lending a hand. Give us your suggestions and criticisms. Write something for the Chemist in regard to the difficulties you have had to overcome in your work. You can tell many things that will be interesting as well as beneficial not only to your brother alumnus, but to the student here in the laboratory.

In large part we have reiterated the sentiment expressed in the first issue of the Chemist. This anticipated need has proven to be a reality. We realize that, to make the Chemist the best possible, we must have the coöperation of the alumni.

LEST WE FORGET!

Alumni, the Chemist is yours. Every alumnus, for whom we have an address, receives it; and as long as it is published we hope to retain every one on the mailing list. But this will be impossible

without more paid-up subscriptions. This may seem like an unimportant item to you, but at present we are able to publish it largely because of our faith in you to support it. Why not be a "live wire" instead of a "dead-header"? Quite a few alumni have already paid their subscriptions. Why not you? It is interesting to note, too, that most of those who have paid made their checks for a dollar instead of seventy-five cents.

HISTORY OF CHEMISTRY AT CAROLINA

(Continued from last issue.)

DR. F. P. VENABLE.

Though the total number of students in the University in 1880 was small (about one hundred and fifty in all), the chemistry classes were well filled. The work with the laboratory classes was especially arduous, as there was no assistant and the laboratories were widely separated. Quantitative analysis was taught in Person Hall, the present Pharmacy Building, and qualitative underneath the library. The hours of work were the same for both classes, and I was kept fairly on the run from one building to the other.

I recall that on one occasion I had shown the qualitative students, some thirty-five in number, how to put together small generators for hydrogen sulphide out of salt-mouth bottles, corks, and glass tubing, no other materials being available. I was forced then to leave them to their own devices while I crossed the campus to get the other class started. When I returned, I found that in one respect the generator had proved a success. Hydrogen sulphide had been generated in generous quantities. The class had abandoned *en masse* the wretched cellar which served as a laboratory and were strewed about under trees and on the grass, some sick, some pale, and some disgusted. After that I had to prepare gallons of water saturated with the gas and let the class use it in that form, as no other appliances were available. Also, I had to make my own iron sulphide out of nails and sulphur in a Hessian crucible at the village blacksmith shop, the negro laboratory servant blowing the bellows for me. He watched with popping eyes the heavy fumes of sulphur rolling from beneath the lid of the crucible and caught

some whiffs of the pungent sulphur dioxide, and was much excited when I told him he was heating the brimstone which he had read about in the Bible. He was something of a preacher among his race, and the story goes that he held quite a revival among his congregation, describing to them the brimstone and its terrors, assuring them it was something they did not wish to have anything to do with either in this world or the next!

Another serious inconvenience was that we were forced to use gasoline machines for our gas. There were no mixers then and no suitable burners. After some years of worry from this source I invented the modification of the Bunsen burner which is at present almost universally used. One can scarcely realize the saving in money, time, and temper unless he has had experience of the old method. With a fresh supply of gasoline, the flame was commonly from twelve to eighteen inches high. If turned low, there was only unctuous soot and little heat.

And yet in these beginning years a number of young men grew to love the science and laid the foundations for careers of usefulness and success. And each year I found some who would undertake with me such simple investigations as the limited appliances and means at our command permitted. They were pleased with the publication when the results were worthy, and they caught the spirit—which was the great thing, after all.

After a year or so an assistant was added to the force. My first assistant, after a brief trial, concluded to study for the ministry, and became a prominent minister, and is now professor in a Southern university. Prof. J. C. Roberts, now of the Colorado School of Mines, was another early assistant, and so was Dr. Emil de Schweinitz, afterwards dean of the medical department in George Washington University. Dr. Isaac H. Manning, dean of the medical department in this university, Dr. Charles Baskerville, professor in the College of the City of New York, Dr. J. E. Mills, professor in South Carolina University, Dr. R. O. E. Davis, of the United States Bureau of Soils, and a number of others who have attained prominence in their profession, were at one time assistants in the department here.

(To be concluded.)

DEPARTMENTAL NOTES

Dr. Herty attended the spring meeting of the American Chemical Society at Urbana, Ill., April 17-21. On the twenty-first he addressed the Indianapolis Section of the American Chemical Society on "Chemistry As An Aid to the Efficiency of Democracy." On the following day he spoke at the University of Michigan to the students in chemistry on the subject, "Chemical Rambles."

On March 16 he addressed the Virginia Section of the American Chemical Society, at Richmond, on "Revolution in Coke-making and Its Bearing on the National Welfare."

On April 4 he spoke to the American Cotton Manufacturers' Association in Atlanta, Ga., on "The Dye-stuff Situation."

DIRECTORY OF THE GRADUATES OF THE DEPARTMENT OF CHEMISTRY, UNIVERSITY OF NORTH CAROLINA

To the older graduates of the Department the directory which follows will doubtless seem very incomplete. We have been unable to secure a list of names of graduates further back than 1900. Although a number of names of members of earlier classes is included, a larger number doubtless is missing, and any information which will make the list more complete will be greatly appreciated. If you recall any name not appearing below, send it to us, and we shall make an effort to locate the man.

All names marked with an asterisk (*) indicate addresses and lines of work which are reliable. In most cases we have had direct communication with the men themselves; in others, trustworthy information has come from other sources. Those unmarked are for the men with whom we have been unable to get in touch. We have given, however, such information as is available, which may or may not be correct. The directory, as stated above, is incomplete, but we feel justified in asking your indulgence until we can institute a more thorough search for directory material.

*ALLEN, MISS DAISY, '07.....Raleigh, N. C.
State Laboratories.

*ALLEN, W. M., '93.....526 N. Wilmington St., Raleigh, N. C.
State Food and Oil Chemist.

*ALLEN, R. T., S.M., '08.....Wadesboro, N. C.
Merchant.

- ASBURY, J. J., '00.....Birmingham, Ala.
Chemist, Tennessee Coal and Iron Company.
- *BASKERVILLE, CHARLES, Ph.D., '94.....New York.
Head Department of Chemistry, College of the City of New
York.
- *BATTLE, H. B., Ph.D., '87.....103 S. Court St., Montgomery, Ala.
Battle Laboratory.
- *BELDEN, A. W., '97.....Woodlawn, Pa.
Superintendent of the Coke Oven Department, Laughlin
Steel Company, Alguippa Plant.
- *BELDEN, L. DEK., '10.....New York City.
Interne Roosevelt Hospital.
- BENNETT, H. H., '03.....Washington, D. C.
Soil Survey.
- BRANSFORD, CHARLES, '06.....Ensley, Ala.
Chemist, Tennessee Coal, Iron and Railroad Company.
- BRINKLEY, L. L., '07.....Raleigh, N. C.
State Soil Survey.
- *BRYAN, P. R., '13.....Charleston, S. C.
Instructor in Chemistry, South Carolina Medical College.
- BURNS, R. C., '07.....Allens Creek, Tenn.
Bon Air Coal and Iron Company.
- *CARTER, C. B., S.M., '14.....Chapel Hill, N. C.
Candidate for the degree of Doctor of Philosophy, 1916.
- *CATLETT, G. F., '03.....Wilmington, N. C.
Chemist and Bacteriologist for the local Board of Health.
- CHADBOURNE, G., '00.....Died 1901.
- *CLARKE, THOMAS, S.J., '96.....Woodstock, Md.
Woodstock College. Ordained priest, 1915.
- *CONROY, F. D., '14.....Baltimore, Md.
Medical Student, Johns Hopkins University.
- *COOPERSMITH, S., '10.....1501 11th St., N. W., Washington, D. C.
Bureau of Chemistry.
- COUBLE, D. Z., '02.....Birmingham, Ala.
Birmingham Coal and Iron Company.
- *COULTER, V. A., S.M., '14.....Chapel Hill, N. C.
Candidate for the degree of Doctor of Philosophy, 1916.
- *COWELL, C. F., '12.....Washington, N. C.
Salesman for the Pamlico Chemical Company.
- *COX, H. L., '14.....Dover, N. J.
Hercules Powder Company.
- *DANCY, F. B., '81.....Box 1010, Baltimore, Md.
Manager Northern Division F. S. Royster Guano Company,
1604-1615 Munsey Building.

- *DAVIS, R. O. E., Ph.D., '03.....Washington, D. C.
Bureau of Soils.
- *DICKSON, W. S., '07.....Greensboro, N. C.
City Editor, *Greensboro News*.
- *DOBBINS, J. T., Ph.D., '14.....West Raleigh, N. C.
Associate Professor of Chemistry, A. and M. College.
- *DRANE, F. P., '06.....22½ W. 5th St., Charlotte, N. C.
Drane Laboratory, Analytical and Consulting Chemist.
- *EDWARDS, V. C., Ph.D., '15.....Spartanburg, S. C.
Associate Professor of Chemistry, Wofford College.
- *FEILD, ALEX. L., '11.....111 Maple Ave., Edgewood, Pittsburg, Pa.
Assistant Physical Chemist, Iron and Steel Section, Metallurgical Division, Bureau of Mines.
- *FLUME, A. J., '14.....Geneva, N. Y.
New York Experiment Station.
- FOUST, THOMAS B., '03.....Cumberland Furnace, Tenn.
- GLENN, M. R., '03.....Deceased.
- *GRAHAM, J. O., A.M., '13.....Lebanon, Tenn.
Professor of Chemistry, Cumberland University.
- GRAHAM, N. R., '04.....Died 1914.
- *HALL, R. B., '11.....Copper Hill, Tenn.
Assistant Superintendent of Trinitrotoluol Plant, Tennessee Copper Company.
- HARDISON, R. B., '07.....Washington, D. C.
Bureau of Soils.
- *HARRELL, W. H., '14.....Chapel Hill, N. C.
Studying medicine.
- *HARRIS, I. F., '00Bronxville, N. Y.
Biological Chemist, Arlington Chemical Company, Yonkers, N. Y.
- *HARRIS, J. R., '89.....1230 S. 17th St., Birmingham, Ala.
Chief Chemist, Tennessee Coal, Iron and Railroad Company, Ensley, Ala.
- *HARRIS, STANFORD, '97.....769 W. Saratoga St., Baltimore, Md.
- *HART, E. B., '13.....Raleigh, N. C.
Department of Agriculture.
- *HAYWOOD, W. G., '98.....Raleigh, N. C.
Assistant Chemist, Department of Agriculture.
- *HEIDE, S. S., '04.....Box 327, Ensley, Ala.
Assistant Chemist, Tennessee Coal, Iron and Railroad Company.
- HENDERSON, J., '02.....201 Devonshire St., Boston, Mass.
Electrical Engineer.

- *HENDERSON, J. L., P.D., '15 Burlington, N. C.
Manager City Drug Company.
- HENRY, R., '06 Richmond, Va.
Virginia-Carolina Chemical Company.
- *HILL, HAMDEN, '07..... Oxford, N. C.
R. G. Lassiter & Co.
- HILL, HUBERT, '07..... Baltimore, Md.
Johns Hopkins University.
- *HOKE, C. B., '13..... Chapel Hill, N. C.
Instructor in Chemistry, University of North Carolina.
- *HOLLAND, W. R., '03..... Gloucester City, N. J.
Welsbach Light Company.
- *HOUCK, W. A., '09..... Lenoir, N. C.
Farming.
- HOYLE, A. H., '06.....
- HUNTER, R. L., '11..... Norfolk, Va.
- HUNTER, W. S., '07.....
- *IRWIN, J. P., '04 Wilmington, Del.
DuPont Powder Company.
- *JACKSON, J. Q., '08..... Raleigh, N. C.
Department of Agriculture.
- *JEFFRIES, W. L., Ph.D., '15..... 703 DuPont Bldg., Wilmington, Del.
Research Chemist, By-Products Division, DuPont Powder
Works.
- *JOHNSTON, G. A., '04..... Chapel Hill, N. C.
Farming.
- *JORDAN, STROWD, Ph.D., '09..... New York.
Research Chemist, American Tobacco Company.
- KELLY, F. G., '00 Ensley, Ala.
Assistant Chemist, Tennessee Coal, Iron and Railroad
Company.
- *KENAN, W. R., JR., '95..... Lockport, N. Y.
Electrical Engineer.
- *KILLIFFER, D. H., '15..... Franklin, Tenn.
Chief Chemist, Benzole Products Company.
- KING, R. N., '00 Thomas, Ala.
Republic Iron and Steel Company.
- *KLUGH, B. A., '01..... 1112 Pike St., Seattle, Wash.
- *KLUTTZ, WARREN, '03..... Thomas, Ala.
Superintendent, Republic Iron and Steel Company.
- *KNIGHT, B. H., A.M., '13..... 50 Mt. Pleasant Ave., East Orange, N. J.
Edison Laboratories.
- LEMLY, F. H., '02..... San Antonio, Tex.

- *LEONARD, G. F., '07.....Washington, D. C.
Medical Assistant with U. S. Marine Hospital Service.
- *LICHTENTHALER, R. A., '02.....Box 112, Kingston, R. I.
Rhode Island Agricultural Experiment Station.
- *LOCKHART, L. B., '04.....Atlanta, Ga.
Lockhart Laboratory.
- *MACNIDER, G. M., '05.....Greenville, S. C.
Corn Products Company.
- *MACRAE, DUNCAN, '09.....Boston, Mass.
Candidate for degree of Doctor of Philosophy, 1916, at
Massachusetts Institute of Technology. Major subject,
Physical or Theoretical Chemistry.
- *MANNING, I. H., '86.....Chapel Hill, N. C.
Dean of the School of Medicine, U. N. C.
- *MARRIOTT, W. M., '04.....Baltimore, Md.
M.D., Cornell, 1910. Associate in the Department of
Diseases of Children, Johns Hopkins Medical School.
- MILLER, C. L., '00.....Birmingham, Ala.
Sheffield Coal and Iron Company.
- *MILLER, C. W., '05.....Ensley, Ala.
Semet Solvay Company.
- *MILLER, F. W., '98.....Talladega, Ala.
Alabama Coal, Iron and Coke Company.
- *MILLS, J. E., Ph.D., '01.....Columbia, S. C.
Professor of Chemistry in University of South Carolina.
- *MOSES, A. F., '97.....LaGrange, Ga.
- *MOSS, E. G., '02.....Oxford, N. C.
- *NASH, T. P., '10.....Memphis, Tenn.
Instructor of Chemistry in Medical College.
- OATES, W. M., '09.....Tarboro, N. C.
- *OLDHAM, W. H., '05.....Box 297, Bessemer, Ala.
Superintendent of Foundry Furnaces, Tennessee Coal,
Iron and Railroad Company.
- ORR, M., '08.....Charlotte, N. C.
Automobile business.
- PADDISON, GEORGE L., '05.....
Assistant Chemist, University of Mississippi.
- *PERRY, R. W., '05.....Detroit, Mich.
Michigan Central Testing Laboratories.
- *PHILLIPS, W. B., '77.....Golden, Col.
President, Colorado School of Mines.
- *POGUE, J. E., S.M., '07.....University Club, Evanston, Ill.
Geologist, Northwestern University.

- PRIOR, W. S., '02.....Birmingham, Ala.
- *PRITCHARD, W. N., JR., '15.....1016 Jackson St., Wilmington, Del.
Research Chemist, DuPont Powder Company.
- *RHODES, L. B., '13Raleigh, N. C.
Assistant Chemist in Food and Oil Division, State Labora-
tories.
- *ROBERTS, J. C., '84.....Golden, Col.
Professor in Colorado School of Mines.
- ROOT, A. S., '01.....Raleigh, N. C.
- *RUDISILL, W. A., S.M., '14.....Greenville, Pa.
Professor of Science in Thiel College.
- SIFFORD, ERNEST, '05.....Birmingham, Ala.
Birmingham Testing Laboratory.
- *SKINNER, J. J., '03.....Washington, D. C.
Bureau of Plant Industry.
- SLOAN, C. H., '06.....Thomas, Ala.
Republic Iron and Steel Works.
- SMITH, W. A., '09.....Home address, Goldsboro, N. C.
Medical student, University of Pennsylvania.
- *SOUTHARD, L. G., M.S., '08.....Union, S. C.
Lawyer.
- *STACEY, L. E., A.M., '13.....North Wilkesboro, N. C.
Chemist, Smoot Tanning Company.
- STEM, F. B., '07.....Guantanamo, Cuba.
Chemist, Guantanamo Sugar Company.
- STEVENSON, R., '03.....501 W. 110th St., New York.
Chemist, College City of New York.
- *STROWD, W. H., '09.....Madison, Wis.
Head of Feed and Fertilizer **Control for the State**.
- *STRUTHERS, J. A., '14.....15 Hoogland, Dover, N. J.
Chemist to Hercules Powder Company.
- THIES, D. A., '91.....Died 1908.
- *THORPE, J. B., '03.....Box 614, Gary, Ind.
Chief Chemist, Indiana Steel Company.
- TILLET, E. N., Student 1909-10.....Durham, N. C.
- *TOWNSEND, J., '13Boston, Mass.
A. D. Little Laboratories.
- *TURRENTINE, J. W., '01.....Washington, D. C.
Bureau of Soils.
- TYSON, J. J., '06.....Ensley, Ala.
Chemist, Tennessee Coal and Iron Company.

- *VENABLE, C. S., A.M., '11.....Boston, Mass.
Candidate for degree of Doctor of Philosophy, 1916, at
Massachusetts Institute Technology.
- *WEAVER, F. R., '13.....Springfield, Ill.
Chemist, Western Cartridge Company.
- WELLER, H. R., '03.....Berkley, Va.
- *WHITAKER, DEB., '93.....Box 195, Santiago, Cuba.
Vice-President and General Manager of the Juragua Iron
Company.
- *WHITAKER, W. A., '04.....Lawrence, Kan.
Teaching Applied Chemistry and Metallurgy in the Uni-
versity of Kansas and directing the Division of State
Chemical Research.
- *WILKES, J. F., '81.....Charlotte, N. C.
Manager Mecklenburg Iron Works.
- *WILLIARD, C. W., '11.....1227 Market St., Wilmington, Del.
Chemist for Krebs Pigment and Chemical Company.

A SUGGESTION TO ALUMNI

For the consideration of the alumni we present a specimen of directory material received from one of the most distinguished of our younger alumni. If all were as conscientious, certainly the directory would be reliable, complete, accurate, and entirely trustworthy.

For Frontispiece, "Who's Who in Chemistry." (No extra charge.)

CHARLES SCOTT VENABLE. Born September 3, 1891. (The more promising looking one was named John Manning Venable.) White (slightly freckled), pure American, but a bleacherite for the Allies. Pronounced educated at U. N. C. in 1910 (A.B.) and again in 1911 (A.M.). Appealed, and was sent to Mass. Inst. Tech., 1914—*ad infinitum*. Case still being considered, but will either get a Ph.D. or a *habeas corpus*. Teacher Wilmington High School, 1911-12. Instructor U. N. C., 1912-13. Assistant M. I. I., 1913-15. Intentions, "watchful waiting." Inclinations, pedagogical. Unmarried. Smokes his friends' tobacco, but does not chew. (For further information, send another card.)

A SIMPLE ELECTRIC HEATER FOR CONTINUOUS WORK AT MODERATELY HIGH TEMPERATURES

The heater to be described has worked satisfactorily for continuous runs of more than a month in experiments in which it was desired to heat sealed tubes at constant temperature for several days at a time. A brief description is here given, with the hope that it may find wider application either in its present or in some modified form. It is simple in design and cheap of construction. It can readily be set up in any laboratory where alternating current is available. The materials necessary are an ordinary thick-wall, wide-mouth reagent bottle of about one liter capacity; a twelve-inch Liebig condenser; twenty feet of No. 24 Nichrome wire; a water tank (5-10 gals. capacity) with two outlet tubes, fourteen to sixteen inches apart, one near the top, the other near the bottom of the tank; a rubber or cork stopper, and a thermometer.

The bath is set up as follows: The Nichrome wire wound into a coil of three-eighths inch diameter is supported on a form made of glass rod which rests on the bottom of the bottle and prevents the hot wire from coming in contact with the walls of the bath. It is thus seen that the heating coil is immersed in the bath-liquid. The terminals of the heating coil are connected to leads of copper wire which pass out of the bath through shallow grooves cut in the sides of the stopper, thence through the rheostat to the 110-volt main. The stopper is pierced with two holes, one of which carries the thermometer, the other the condenser tube. The condenser is connected to the water tank by means of rubber tubes and works automatically. Alcohol, water, toluol, etc., serve as bath liquids. Superheating is practically nil and temperature variations slight, the latter being due chiefly to atmospheric changes.

CHEAP ELECTRICAL COMBUSTION FURNACE

An inexpensive electrically heated combustion furnace for elementary organic analysis has been built in this laboratory this year and has given more satisfactory results than the gas-heated furnaces. A threaded quartz tube thirty inches long and five-eighths of an inch internal diameter was used. This tube was wound with No. 24 Nichrome wire, the winding being divided into

four sections and the whole covered with four layers of asbestos twine. The section of the tube containing copper oxide was wound with just sufficient wire to hold the temperature at 550-600 degrees when connected directly across the 110-volt mains. The winding over the boat section of the tube is connected with a rheostat giving a temperature control of from 80-600 degrees. Two short sections, one on each side of the boat section, are connected in series and also controlled by a smaller rheostat, giving a range of temperature of about 380-600 degrees. This furnace has the disadvantage that the boat cannot be seen, and therefore the rate of combustion cannot be controlled so accurately as with a gas furnace. For this reason the oxygen and air should be forced through the apparatus by pressure instead of drawn through by an aspirator, since a better control of the flow of gases into the absorption apparatus can be had in case the material in the boat burns too rapidly.

The combustions made with this furnace are fully as accurate as those made with the gas furnace, as shown by the following results obtained with a pure sample of anisic acid:

	<i>Found</i>		<i>Calculated</i>
	I	II	
C	63.03	63.05	63.13
H	5.53	5.38	5.30